WOOD STRUCTURAL PANELS - ORIENTED STRAND BOARD (OSB)

AC 23-2

Discipline: Structural

Issued 10-06-2004

References:
California Building Code, Sections 2302A.1, 2304A.1, 2312A.1, 2312A.2, 2315A.3.3, and 2315A.5
UBC Standard 23-3, (same as Voluntary Product Standard PS 2-92), APA Panel Design Specification D510.

This Acceptance Criteria (AC) document establishes requirements for the specified building material or component for use in projects under DSA jurisdiction, in accordance with referenced provisions of Title 24. The purpose of this AC document is to promote statewide consistency in the application and enforcement of Title 24 by project design professionals and DSA staff for projects under DSA jurisdiction.

DSA may consider alternate criteria, provided the project design professional submits valid data demonstrating that the alternate criteria are at least equivalent to the criteria set forth in this document, and otherwise demonstrate compliance with Title 24.

This AC document is subject to review on a regular basis by DSA, and may be revised at any time. Currently effective AC documents are posted on the DSA website at http://www.dsa.dgs.ca.gov/Publications/default.htm.

Purpose: This AC clarifies the criteria under which the Division of the State Architect will accept the use of oriented strand board (OSB) as wood structural panels on projects under DSA jurisdiction, which includes State of California public elementary and secondary schools (grades K-12), community colleges, and state-owned or state-leased essential services buildings.

Background: The definition of wood structural panels in the 2001 CBC is limited to "all-veneer plywood." OSB panels have demonstrated a history of acceptable performance. The model building code, adopted by the State of California (1997 UBC), includes OSB in the definition of wood structural panels.

Scope: This AC applies to OSB panel grades (structural floor, roof and wall sheathing) contained in UBC Standard 23-3, and is not applicable to OSB exterior siding.

1. CONDITIONS OF USE. Wood structural panels may include OSB panels. The use and installation of OSB panels shall comply with the requirements for wood structural panels in the 2001 CBC, 1997 UBC, and this document.

2. MATERIALS. OSB panels shall comply with UBC Standard 23-3. Certification and panel marking shall comply with PS 2-92, Section 7. Each panel shall bear markings identifying the qualified testing and inspection agency (as defined in Section 3), grade, nominal thickness, span rating, exposure durability classification and the standard to which it is certified.

3. QUALIFIED TESTING AND INSPECTION AGENCY. Appendix A is a list (furnished by International Accreditation Service, Inc.) of qualified testing and inspection agencies. Testing and inspection agencies may be placed on this list if they meet all of the following conditions:

3.1 Conform to PS 2-92 Section 7.1.1.

3.2 Accredited by International Accreditation Service, Inc. in accordance with ISO/IEC 17020 and 17025 standards, and

3.3 The scope of accreditation shall include testing and inspection of wood-based structural-use panels for compliance with PS 2-92 requirements.

4. DESIGN.

4.1 Sheathing. OSB structural floor sheathing and roof sheathing shall meet the design requirements of CBC Section 2312A.1 and 2312A.2 respectively.

4.2 Diaphragms. OSB diaphragms shall be designed in accordance with CBC Sections 2315A.3.3, and 2315A.5. A reduction factor of 0.8 shall apply to Tables 23A-II-H and 23A-II-I-1. Maximum diaphragm dimension ratios shall comply with CBC Table 16A-V for plywood.

4.3 Deflection. When calculating shear wall and diaphragm deflections, the equations for plywood may be used. The modulus of elasticity (E) may be determined from APA Panel Design Specification D510 or may be provided directly by the manufacturer. The nail slip coefficients may be considered the same as for plywood.

For OSB panels under constant load equal to or greater than 50% of their allowable design strength, creep must be considered. Use a creep adjustment factor of 1/6 on panel stiffness (EI) to calculate deflection for panels used in moist conditions (such as raised floors) that produce panel moisture content (MC) of 16% or higher. For dry service conditions that produce panel moisture content of less than 16%, use a creep adjustment factor of 1/2, which is the same for plywood. See APA Panel Design Specification D510, Section 4.5.1, Creep.

5. INSTALLATION REQUIREMENTS. The installation of OSB panels shall comply with the following requirements:

5.1 When panels are used in areas subject to high relative humidity or where condensation can develop (such as roofs with attic space, mansards, raised floor crawl space, etc.), ventilation shall be provided in conformance with Section 1505.3, Part 2, Title 24, CCR, with ample vents located to eliminate dead-air pockets.

5.2 Panels shall be protected from moisture during transit and storage. Wetted OSB panels shall be dried to 16% moisture content or less prior to being installed.

5.3 If installed panels are wetted, they shall be dried to 16% moisture content or less prior to being covered. Alternatively, provide adequate ventilation on the back side to allow drying. All nails pushed up due to material swelling shall be re-driven. Additional nails shall be installed if material swelling causes the nail heads to penetrate into the surface by more than 1/16 inch after drying. If the additional nails result in nail spacing closer than the allowable, then framing or blocking must be added to receive the new nails and provide appropriate shear transfer.

5.4 Installed panels shall be protected from moisture by approved finish materials.

5.5 Edge checks are defined as wood flakes that have become separated from the panel leaving voids in the panel edges. Panels with edge checks greater than 1/4 inch in depth or 2 inches in length at any one location shall render the panel unacceptable for use. The maximum cumulative length of edge checks in a standard 4-ft. by 8-ft. panel shall not exceed 8 inches. Panel edge nailing shall be adjusted to avoid nailing into edge checks.

5.6 Field cut edges of panels shall be protected from the weather, or sealed using an exterior acrylic latex paint.

Appendix A: List of Qualified Testing and Inspection Agencies

Accredited by International Accreditation Service (IAS) to Certify and Mark/Stamp Structural Wood Panels under Product Standard PS 2-92

IAS Accreditation Number	Inspection Agency	Contact Information
AA-649	APA – The Engineered Wood Association 7011 South 19th Street Tacoma, WA 98466	Contact: Mr. Borjen Yeh Telephone: 253-565-6600 e-mail: borjen.yeh@apawood.org
AA-654	TECO 5650 Terra Court Sun Prairie, WI 53590	Contact: Mr. Jim Vogt Telephone: 608-837-2790 e-mail: jim.vogt@tecotested.com
AA-660	Pittsburgh Testing Laboratory 2710 W 5th Avenue Eugene, OR 97402	Contact: Mr. Randy Webb Telephone: 541-484-9212 e-mail: randy.webb@psiusa.com
AA-688	Intertek Testing Services NA Ltd. 1500 Brigantine Drive Coquitlam, British Columbia V3K 7C1 Canada	Contact: Lawrence Gibson Telephone: 604-520-3321 Fax : 604-524-9189 e-mail: lawrence.gibson@intertek.com